

if all's well, to Moreton Bay. I shall have much pleasure in writing to you from the Gulf of Carpentaria, should I have anything of interest to communicate.

I remain,

My dear Sir,

Your obedient Servant,

John Gould, Esq.

M. ELSEY.

February 24, 1857.

Dr. Gray, F.R.S., in the Chair.

The following papers were read :—

1. ON THE SKULL OF A MANATUS FROM WESTERN AFRICA.
BY DR. BALFOUR BAIKIE, F.R.GEOG.S.

(Mammalia, Pl. LI.)

Until very recently but two species of the somewhat scarce genus *Manatus* have been acknowledged by naturalists, viz. *M. australis* (the *M. Americanus* of some writers) and *M. Senegalensis*. Of these the former inhabits chiefly the mouths of the great rivers of the north-eastern coast of South America, and the West Indies, while the latter is confined to the tropical portions of the western coast of Africa. Some writers, as Hernandez, mention a species found along the coasts of Peru; but, if so, little or nothing is known of it or its habits. Wyman has described as *M. nasutus* what is probably a variety of *M. Senegalensis*, and Harlan as *M. latirostris* another Manatee from the Gulf of Mexico, which, however, seems to be a good species.

Individual specimens of *Manati* have rarely been met with along our own shores, as that recorded by Prof. Fleming* as having occurred in the Shetland Islands in 1823; and I am in possession of tolerable evidence, which I intend shortly to publish, that a similar animal has made its appearance from time to time in Orkney, where it is not unknown to fishermen. These are most probably stray members of *M. australis* which have crossed the Atlantic, which belief is, to some extent, supported by the fact that in Orkney they have always been seen on the western or Atlantic side of the islands.

The *M. Senegalensis* has been found in the Senegal, the Gambia, and some rivers of Western Africa; and *Manati* have also been

* *Vide* Fleming in Edin. New Phil. Journal, and Baikie and Heddle's 'Historia Naturalis Orcadensis.'

known to occur in various rivers opening into the Bight of Biafra, which have hitherto been referred to the same species, partly because no specimens had hitherto been critically examined, and partly because it seemed unlikely that two species of a genus so unprolific, even in individuals, should exist in localities so very near to each other. All probability from previous knowledge, or in the absence of more precise or more extended information, merely justified a belief in the existence of two species, one inhabiting the New World, the other peculiar to some tropical portions of the Old World.

The differences between *M. australis* and *M. Senegalensis* are quite evident. The former seems to grow to a greater size, and the shape of the skull at once distinguishes it, being altogether larger, with a more lengthened nasal opening, and more elongated intermaxillary bones, giving it a large mouth. The lower jaw, also, is less massive and angular, and its inferior margin less curved. It would seem to approach more to the fragmentary extinct forms described by Cuvier in his 'Ossemens Fossiles.' In *M. Senegalensis* again the skull is more compact, the snout shorter, the lower jaw more angular with its lower border more curved, and the zygomatic process of the temporal is less elevated.

In 1851, while Dr. Barth was journeying towards the country of Adamáwa in Central Africa, he heard from the natives, accounts of an animal said to frequent the rivers and marshes named by them Ayú (erroneously written Ajúh). He heard of the same animal, under the same name, also up the river Kwóra or Niger below Timbúktu, and he believes that it also exists in the river Shári, which runs into the marshy Lake Tsád. Dr. Barth not having been able to satisfy himself about this creature, directed Dr. Vogel's attention to it, and the latter gentleman fortunately met with a specimen in September 1855 in the upper part of the Binuë or Tsádda. An account of this Ayú having been sent by him to England, and read at the British Association Meeting at Cheltenham, Prof. Owen thought that it presented sufficient peculiarities to distinguish it as a species, which he indicated as *M. Vogelii*; but his remarks partly applied to a *Manatus* skull, which was exhibited at the time, and which by some misconception persons present had been led to consider as belonging to the very individual described by Vogel.

During the months of September and October 1854 I ascended the same river; but though this was the period when they ought to have been most abundant, yet I neither saw nor heard of any such animal; and though I always carefully examined the hunting relics in the various villages, yet I never met with its remains. From this I am led to confirm Dr. Vogel's statement, that it is a rare and scarce creature. But on the 13th July previous, just after I had entered the mouth of the Kwóra and Niger from the sea, I had spent the day in examining some of the interminable dreary creeks, which are there so apt to perplex the voyager. While returning in the afternoon I saw under some palms and mangroves a collection of miserable huts, hardly entitled to the appellation of a village, towards which I pulled and presently landed. The inhabitants in great alarm all fled

into the bush, and could not be induced to come out, so I walked through their habitations, looking around me, but finding nothing but heaps of nuts of the oil-palm. But just before embarking, my eye caught a heap of dry bones, placed evidently by the negroes as their dju-dju, or sacred heap, remains of their hunting achievements, and now dedicated to their deity. I eagerly examined the mass, but found to my grief that it was composed mostly of fragments, among which were portions of skulls of goats, of a bullock, and of a crocodile; but on turning these over I saw a more complete relic, one which struck me as being peculiar, and as something I had not previously seen. This I carried off, and it turned out to be the nearly complete skull of a *Manatus*, which was the skull exhibited at Cheltenham. Having had time lately to examine it, I found it to exhibit the peculiarities remarked by Prof. Owen, and the result is as follows:—

General Measurements.

	inches.
Extreme length	$12\frac{1}{2}$
Greatest depth	8
Length of nasal orifice	$4\frac{1}{4}$
Breadth of nasal orifice	2
From edge of orbit to extremity of snout	$3\frac{5}{8}$
From anterior molar socket to extremity of snout	$3\frac{3}{8}$
From anterior edge of infraorbital foramen to ditto	$3\frac{1}{4}$
From maxillary and intermaxillary suture to ditto	$1\frac{3}{4}$
Greatest depth of zygomatic arch	$2\frac{1}{2}$

The proportions of the skull are more elongate than those of *M. Senegalensis*, but less so than *M. australis*. Top of skull oblong, bounded by two almost completely parallel ridges on the frontal and parietal bones. Frontal suture remaining, parietal bones united. Breadth of orbits nearly one-half of their length; orbits directed outwards, nearly in a plane with the snout at an angle of about 40° ; lower edge of orbits circular, smooth, and not tuberculated. Intermaxillaries more lengthened than in Cuvier's figure of *M. Senegalensis*, but much less deep, and not nearly so elevated along the anterior angle of the nasal cavity. Cavities for nine upper molars, the anterior being but a single socket, the others adapted for three dental fangs, one internal, and two external and lateral. Fangs flattened and slightly expanded at extremity; the two external directed immediately upwards; the internal one, rather the longest, directed upwards and inwards, especially the more anterior ones. Two posterior molars still undeveloped. Molars multicuspid, with two transverse irregularly tri-tubercular ridges, the posterior one being generally partially divided into two by a small groove. The ridges on the remaining anterior molars (third and fourth) much rubbed down and worn, exposing the dentine. Remains of one incisive socket at extremity of each intermaxillary near the suture. Incisive foramen pyriform, the base anteriorly.

Lower jaw less massive than in *M. Senegalensis*, with posterior

angle less marked, and lower border much less curved; opposite sides completely ankylosed, a deep hollow under upper and inner edge. Cavities existing for eight molars, the socket of the anterior one being simple; two posterior molars but partially developed. Lower molars more distinctly three-ridged than the upper ones, but the ridges less evidently tri-tubercular. Molars with two fangs, anterior and posterior, resembling the two external fangs of the upper molars, directed downwards, flattened and expanding, especially the posterior one. Molars deciduous from before backwards, seemingly forced out by the gradual advance forwards of the posterior ones.

The temporal bones being both wanting, I am unable to speak of the zygomatic processes, which differ in shape in the two previously known species.

Dr. Vogel's measurements being from an entire head, while mine are from the dried skull, the size of the respective animals will nearly approach each other, mine being rather the smaller. In the distance between the orbit and the snout, on which Prof. Owen lays stress, they will be found so fairly to agree that they may be presumed to belong to the same species. Let us now therefore see whether the other measurements and proportions of the one we have been considering differ sufficiently from others to favour the presumption of its being a species. In *M. Senegalensis*, the contour, looking at the skull from above downwards, is nearly that of an isosceles triangle, closely approaching an equilateral triangle, while that of *M. australis* more resembles the outline of a violoncello. In the Niger specimen again, the form, though more nearly resembling the former, is certainly of an intermediate character, the base of the triangle being shorter in proportion. The profile view of *M. australis* shows a lengthened, rather narrow beak, while *M. Senegalensis* has one shorter and remarkably deep; and here again we have an intermediate form, the shape in this case certainly more resembling *M. australis*. The inferior border of the lower jaw of *M. australis* is long and straightened, while that of *M. Senegalensis* is short and curved, its posterior angle, also, being more massive and decided, and approximating to that of the Dugong. Here again the Niger Manatee intervenes, the angle being more obtuse, and the curve less than in the Senegal species. The proportion of the length of the nasal opening in *M. australis* is to the breadth as 3 to 1, in *M. Senegalensis* as 1 to $\frac{2}{3}$, but in my specimen as 2 to 1. The coronal suture, sharply angular in the South American and almost semicircular in the Senegal species, is in the Niger one acutely arched. The temporal ridge irregularly converges posteriorly in *M. australis*, in *M. Senegalensis* they gently diverge, while here they run antero-posteriorly almost entirely parallel. The temporal bones being, as I have remarked, absent, I cannot speak of the temporal zygomatic apophyses; but the molar portions which remain would seem to indicate a continuance of the same intermediate character.

But in a few points the Niger skull is peculiar, and differs quite from the others. Thus the superior and anterior angle of the parietal bone extends much further forward than in either of the others, being

to within less than an inch of the posterior angles of the nasal opening. The anterior edge of the post-orbital apophysis and the lower margins of the orbits are plain and smooth, not irregular. The vomerine sheath is not nearly so prolonged anteriorly, and does not reach to within an inch of the anterior incisive foramen. The maxillary and inter-maxillary do not unite by a bevelled surface, but by a suture forming a right angle.

On one point we can draw a tabular view of the whole of the skulls, viz. as to the comparative distance of the orbit from the end of the beak, which, compared with the total length of the skulls, is as follows :—

In Dr. Vogel's entire head of the Ayú as 7 to 36, or about 1 to 5.

In the skull from the mouth of the Kwóra as 27 to 100, or more than 1 to 4.

In the skull of *M. Senegalensis* as 1 to 3 nearly.

In the skull of *M. australis* as 5 to 14, or less than 1 to 3.

From what I have drawn out we may, I believe, make the following deductions: 1st, That in the Kwóra or Niger, and its tributary the Tsádda or Binuë, is found a *Manatus* intermediate in many of its characters between *M. australis* and *M. Senegalensis*; and 2ndly, That if these differences are, as Prof. Owen suggests, too marked for a mere variety, then there is no alternative but to allow it as a species. I do not mean to affirm its positive existence, but merely following up the idea thrown out by Prof. Owen, in examining the skull I brought home, I think the *probability* of its distinctiveness is considerably increased. Being about to revisit the river Kwóra I shall make a point of searching more closely after this animal, with a view to settling the question. If established, the genus will stand as follows :—

MANATUS, Rondel.

1. MANATUS AUSTRALIS, Tiles.

Hab. West Indies and north-east coast of South America.

2. MANATUS SENEGALENSIS, Desm.

Hab. African rivers, Senegal to the Gambia.

3. MANATUS VOGELII, Owen.

Hab. Rivers opening into the Bight of Biafra.

Whether *M. nasutus* of Wyman and *M. latirostris* of Harlan are species, varieties, or synonyms, I have not the means of ascertaining.

M. australis is, as I have mentioned, more allied to the extinct fossil forms; and *M. Senegalensis*, again, more approaches in form of skull to the Dugong.